This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (previously presented): A method for stabilizing motion in a sequence of frames, comprising:

retrieving a group of pictures from the sequence of frames, the group of pictures comprising more than two images;

identifying a plurality of features in a first frame in the group of pictures;

determining tracked positions for the features in remaining frames in the group of pictures based on the features in the first frame;

after said determining tracked positions, determining ideal positions for the features in the remaining frames in the group of pictures based on the tracked positions, said determining ideal positions comprises, for each feature:

plotting its position from the first frame and its tracked positions from the remaining frames in an X, Y coordinate graph; and

drawing a motion trajectory that connects a first plotted position from the first frame to a last plotted position from a last frame in the group of pictures, wherein the ideal positions are located on the motion trajectory;

identifying transformation information based on the tracked positions and the ideal positions;

transforming the remaining frames in the group of pictures by adjusting pixels in the remaining frames based on the transformation information; and

repeating for remaining groups of pictures in the sequence of frames.

Claim 2 (original): The method of claim 1, further comprising:

determining whether the sequence of frames was recorded with fast camera motion or slow camera motion.

Claim 3 (previously presented): The method of claim 2, wherein said determining tracked positions comprises:

when it is determined that the sequence of frames was recorded with fast camera motion, performing matching to determine estimated positions for the features in a second frame in the group of pictures.

Claim 4 (previously presented): The method of claim 3, wherein said performing matching comprises:

identifying new features in the second frame; and

matching the features in the first frame to the new features in the second frame.

Claim 5 (previously presented): The method of claim 3, wherein said determining tracked positions further comprises:

when it is determined that the sequence of frames was recorded with slow camera motion, performing global tracking to determine the estimated positions for the features in the second frame.

Claim 6 (previously presented): The method of claim 5, wherein said performing global tracking comprises:

searching a plurality of large areas in the second frame to determine the estimated positions for the features in the second frame, the large areas being centered at positions in the second frame that correspond to positions of the features in the first frame.

Claim 7 (previously presented): The method of claim 6, wherein said determining tracked positions further comprises:

performing local tracking based on the estimated positions of the features in the second frame to determine the tracked positions of the features in the second frame, wherein said performing local tracking comprises searching a plurality of small areas in the second frame

to determine the tracked positions of the features in the second frame, the small areas being centered at the estimated positions of the features in the second frame.

Claim 8 (canceled).

Claim 9 (previously presented): The method of claim 1, wherein said drawing a motion trajectory comprises drawing a linear motion trajectory.

Claim 10 (previously presented): The method of claim 1, wherein said drawing a motion trajectory comprises drawing a non-linear motion trajectory.

Claim 11 (canceled).

Claim 12 (previously presented): The method of claim 1, wherein an ideal position for a feature has a same X-coordinate and a different Y-coordinate as compared to a tracked position for the feature.

Claim 13 (previously presented): The method of claim 1, wherein the transformation information comprises rotation, scaling, shearing, and/or translation information for each pixel of the remaining frames in the group of pictures.

Claim 14 (previously presented): The method of claim 13, wherein said transforming the remaining frames comprises:

adjusting each pixel in each frame based on the rotation, scaling, shearing, and/or translation information.

Claim 15 (previously presented): The method of claim 1, wherein said transforming the remaining frames in the group of pictures comprises:

performing affine transformation using the tracked positions and the ideal positions.

Claim 16 (previously presented): The method of claim 15, wherein said performing affine transformation comprises:

determining values of coefficients representing rotation, scaling, shearing, and/or translation information using the tracked positions and the ideal positions.

Claim 17 (previously presented): The method of claim 16, wherein said performing affine transformation further comprises:

applying the values of the coefficients to each pixel of the first frame to obtain positions of each pixel in a second frame in the group of pictures.

Claim 18 (original): The method of claim 1, further comprising:

performing frame averaging.

Claim 19 (original): The method of claim 1, further comprising:

performing frame sharpening.

Claim 20 to 25 (canceled).

Claim 26 (currently amended): A system, comprising:

a computer including a processor and a memory;

a sequence of frames stored in the memory;

a program stored in the memory of the computer, wherein the program is executed by the processor of the computer to:

retrieve a group of pictures from the sequence of frames, the group of pictures comprising more than two images;

identify a plurality of features in a first frame in the group of pictures;

determine tracked positions for the features in remaining frames in the group of pictures based on the features in the first frame;

after said determine tracked positions, determine ideal positions for the features in the remaining frames in the group of pictures based on the tracked positions, said ~~determining~~ determine ideal positions comprises, for each feature:

plotting its position from the first frame and its tracked positions from the remaining frames in an X, Y coordinate graph; and

drawing a motion trajectory that connects a first plotted position from the first frame to a last plotted position from a last frame in the group of pictures, wherein the ideal positions are located on the motion trajectory;

identify transformation information based on the tracked positions and the ideal positions;

transform the remaining frames in the group of pictures by adjusting pixels in the remaining frames based on the transformation information; and

repeat for remaining groups of pictures in the sequence of frames.

Claim 27 (original): The system of claim 26, further comprising:

a video camera for recording the sequence of frames.

Claims 28 (previously presented): The system of claim 27, wherein the program is executed by the processor of the computer to further:

determine whether the sequence of frames was recorded with fast camera motion or slow camera motion.

Claim 29 (previously presented): The system of claim 28, wherein said determine tracked positions comprises:

when it is determined that the sequence of frames was recorded with fast camera motion, performing matching to determine estimated positions for the features in a second frame in the group of pictures.

Claim 30 (previously presented): The system of claim 29, wherein said performing matching further comprises:

identifying new features in the second frame; and

matching the features in the first frame to the new features in the second frame.

Claim 31 (previously presented): The system of claim 29, wherein said determine tracked positions further comprises:

when it is determined that the sequence of frames was recorded with slow camera motion, performing global tracking to determine the estimated positions for the features in the second frame.

Claim 32 (previously presented): The system of claim 31, wherein said performing global tracking comprises:

searching a plurality of large areas in the second frame to determine the estimated positions for the features in the second frame, the large areas being centered at positions in the second frame that correspond to positions of the features in the first frame.

Claim 33 (previously presented): The system of claim 32, wherein said determine tracked positions further comprises:

performing local tracking based on the estimated positions of the features in the second frame to determine the tracked positions of the features in the second frame, wherein said performing local tracking comprises searching a plurality of small areas in the second frame to determine the tracked positions of the features in the second frame, the small areas being centered at the estimated positions of the features in the second frame.

Claim 34 (previously presented): The system of claim 26, wherein said drawing a motion trajectory comprises drawing a linear motion trajectory.

Claim 35 (previously presented): The system of claim 26, wherein said drawing a motion trajectory comprises drawing a non-linear motion trajectory.

Claim 36 (canceled).

Claim 37 (previously presented): The system of claim 26, wherein said transform the remaining frames in the group of pictures comprises:

performing affine transformation using the tracked positions and the ideal positions.

Claim 38 (previously presented): The system of claim 37, wherein said performing affine transformation comprises:

determining values of coefficients representing rotation, scaling, shearing, and/or translation information using the tracked positions and the ideal positions.

Claim 39 (previously presented): The system of claim 38, wherein said performing affine transformation further comprises:

> applying the values of the coefficients to each pixel of the first frame to obtain positions of each pixel in a second frame in the group of pictures.

Claim 40 (original): The system of claim 38, wherein execution of the program further comprises:

> performing frame averaging; and

> performing frame sharpening.

Claim 41 (currently amended): A system, comprising:

a camera;

a sequence of frames captured by the camera;

a computer with a processor and a memory, wherein [[a]] the sequence of frames is stored in the memory of the computer;

means for determining a position of a feature in a first frame in a group of pictures in the sequence of frames, the group of pictures comprising more than two frames;

means for identifying estimated positions of the feature in remaining frames in the group of pictures;

means for performing local tracking to obtain tracked positions for the feature in the remaining frames based on the estimated positions;

means for determining ideal positions for the feature in the remaining frames based on the tracked positions after said performing local tracking, said determining ideal positions comprises:

> plotting the position from the first frame and the tracked positions from the remaining frames in an X, Y coordinate graph;

drawing a motion trajectory that connects a first plotted position from the first frame to a last plotted position from a last frame in the group of pictures, wherein the ideal positions are located on the motion trajectory;

means for identifying transformation information based on the tracked positions and the ideal positions of the feature in the remaining frames; and

means for transforming the remaining frames by adjusting pixels in the remaining frames based on the transformation information.

Claim 42 (previously presented): The system of claim 41, further comprising:

means for, when it is determined that the sequence of frames was recorded with fast camera motion, performing matching to identify the estimated positions of the feature in the remaining frames.

Claim 43 (previously presented): The system of claim 41, further comprising:

means for, when it is determined that the sequence of frames was recorded with slow camera motion, performing global tracking to identify the estimated positions of the feature in the remaining frames.

Claim 44 (canceled).

Claim 45 (previously presented): The system of claim 41, wherein the transforming information comprises rotation, scaling, shearing, and/or translation information for each pixel of a frame.

Claim 46 (canceled).

Claim 47 (canceled).

Claim 48 (previously presented): A computer readable storage medium encoded with software instructions, wherein execution of the instructions comprises:

retrieving a group of pictures from the sequence of frames, the group of pictures comprising more than two images;

identifying a plurality of features in a first frame in the group of pictures;

determining tracked positions for the features in remaining frames in the group of pictures based on the features in the first frame;

after said determining tracked positions, determining ideal positions for the features in the remaining frames in the group of pictures based on the tracked positions, said determining ideal positions comprises, for each feature:

> plotting its position from the first frame and its tracked positions from the remaining frame in an X, Y coordinate graph; and

> drawing a motion trajectory that connects a first plotted position from the first frame to a last plotted position from a last frame in the group of pictures, wherein the ideal positions are located on the motion trajectory;

identifying transformation information based on the tracked positions and the ideal positions;

transforming the remaining frames in the group of pictures by adjusting pixels in the remaining frames based on the transformation information; and

repeating for remaining groups of pictures in the sequence of frames.

Claim 49 (original): The computer readable storage medium of claim 48, wherein execution of the instructions further comprises:

determining whether the sequence of frames was recorded with fast camera motion or slow camera motion.

Claim 50 (previously presented): The computer readable storage medium of claim 49, wherein said determining tracked positions comprises:

when it is determined that the sequence of frames was recorded with fast camera motion, performing matching to determine estimated positions for the features in a second frame in the group of pictures.

Claim 51 (previously presented): The computer readable storage medium of claim 50, wherein said performing matching comprises:

identifying new features in the second frame; and

matching the features in the first frame to the new features in the second frame.

Claim 52 (previously presented): The computer readable storage medium of claim 50, wherein said determining tracked positions further comprises:

when it is determined that the sequence of frames was recorded with slow camera motion, performing global tracking to determine the estimated positions for the feature in the second frame in the group of pictures.

Claim 53 (previously presented): The computer readable storage medium of claim 52, wherein said performing global tracking comprises:

searching a plurality of large areas in the second frame to determine the estimated positions for the features in the second frame, the large areas being centered at positions in the second frame that correspond to positions of the features in the first frame.

Claim 54 (previously presented): The computer readable storage medium of claim 53, wherein said determining tracked positions further comprises:

performing local tracking based on the estimated positions of the features in the second frame to determine the tracked positions of the features in the second frame, wherein said performing local tracking comprises searching a plurality of small areas in the second frame to determine the tracked positions of the features in the second frame, the small areas being centered at the estimated positions of the features in the second frame.

Claims 55 and 56 (canceled).

Claim 57 (previously presented): The computer readable storage medium of claim 48, wherein the transformation information comprises rotation, scaling, shearing, and/or translation information for each pixel of the remaining frames in the group of pictures.

Claim 58 (previously presented): The computer readable storage medium of claim 48, wherein said transforming the remaining frames in the group of pictures comprises:

performing affine transformation using the tracked positions and the ideal positions.

Claim 59 (previously presented): The computer readable storage medium of claim 58, wherein said performing affine transformation comprises:

determining values of coefficients representing rotation, scaling, shearing, and/or translation information using the tracked positions and the ideal positions.

Claim 60 (previously presented): The computer readable storage medium of claim 48, wherein said performing affine transformation further comprising:

applying the values of the coefficients to each pixel of the first frame to obtain positions of each pixel in a second frame in the group of pictures.

Claim 61 (previously presented): The method of claim 4, wherein said matching the features in the first frame to the new features in the second frame comprises:

determining a distance histogram and a direction histogram to neighboring features within an area of each of the features in the first frame and the new features in the second frame; and

determining correspondences between the features in the first frame and the new features in the second frame by comparing their distance and direction histograms.

Claim 62 (previously presented): The method of claim 61, wherein said searching a plurality of large areas comprises:

determining correspondences between the positions of the features in the first frame and the estimated positions of the features in the second frame by comparing values of neighboring pixels of each feature in the first frame with values of neighboring pixels centered about each pixel in a corresponding large area in the second frame.

Claim 63 (previously presented): The method of claim 62, wherein said searching a plurality of small areas comprises:

determining correspondences between the features in the first frame and the features at the estimated positions in the second frame by comparing values of neighboring pixels of each feature in the first frame with values of neighboring pixels centered about each pixel in a corresponding small area in the second frame.